

CAN DIFFERENCES IN CHARACTERISTICS EXPLAIN ETHNIC WAGE GAP IN LATVIA?

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Abstract. We used anonymized micro data from Labour Force Survey to estimate the ethnic wage gap in Latvia and find the factors that explain it. We found that a notable ethnic wage gap still exists in Latvia with non-Latvians earning 10 % less than Latvians in 2015. The results of Oaxaca-Ransom decomposition show that approximately two thirds of the ethnic wage gap are explained by differences in characteristics with the most important effects in favour of Latvians caused by segregation in better paying occupational groups, having Latvian citizenship and better education (higher education levels and more favourable segregation by education fields). This was partly offset by favourable segregation in sectors for non-Latvians. Quantile regressions show that ethnic wage gap is statistically significant in all deciles of wage distribution.

Keywords: *Discrimination, ethnic wage gap, income inequality, Oaxaca-Ransom decomposition*

INTRODUCTION

As Latvia has one of the largest shares of ethnic minorities in the European Union (EU), every now and then questions of possible discrimination towards non-Latvians are raised. Furthermore, there is some evidence that Latvians and non-Latvians are treated differently in the labour market (LM, 2007). Unequal conditions in labour market might cause wages to differ among population groups, hence leading to differences in standard of living and social tensions. Governments should therefore carefully design policies to ensure equality in labour market. To facilitate the decision-making process for respective government authorities, up to date estimates of differences in wages, i.e. ethnic wage gap are crucial.

One, however, should be aware that differences in wages between population groups can be caused by various reasons. Differences in characteristics such as education attainment and experience in the labour market is one example. Other reasons include, but are not limited to: (a) direct discrimination and (b) segregation in different occupations and sectors. It is therefore important not only to estimate the ethnic wage gap, but also to understand to what extent differences in wages can be explained by differences in characteristics.

To best of our knowledge there are no up-to-date estimates of ethnic wage gap in Latvia, therefore we fill this gap in literature and provide estimates for 9-year period (from 2007 to 2015). Furthermore, we estimate to what extent ethnic wage gap is caused by the differences in characteristics. By doing that we seek to answer two questions: (1) is there a significant ethnic wage gap in Latvia? (2) if it exists,

can it be explained by differences in characteristics? Answers to these two questions provide statistical grounding for policy makers to decide if and what kind of actions is necessary to ensure ethnic equality in the labour market.

In our baseline specification, we employ Oaxaca-Ransom decomposition method (Oaxaca & Ransom, 1994) which allows us to estimate both conditional and unconditional ethnic wage gaps. In addition, we also use quantile decomposition methods to see if the wage gap is the same for high and low wage earners. This also serves as a robustness check for our baseline results.

Main findings show that significant ethnic wage gap still exists in Latvia with ethnic minorities earning 10 % less than Latvians in 2015. Majority of the wage gap however can be explained by differences in characteristics and the unexplained part is rather small. These results imply that in case of Latvia one should be cautious when interpreting the ethnic wage gap as discrimination. Both direct and indirect evidence point to the importance of state language proficiency, therefore from policy perspective, strategies focusing on raising the Latvian language skills among non-Latvians could reduce both conditional and unconditional wage gaps.

Reminder of the paper is structured as follows. Section 1 briefly reviews the literature on the topic of ethnic wage gaps. Section 2 presents the data and describes the methodology employed in this study. Section 3 provides the estimates of ethnic wage gap in Latvia as well as decomposition results. The last section concludes.

1. LITERATURE REVIEW

Analysis of the ethnic, but most particularly racial wage gap has received a fair share of attention in international literature (see for example Albrecht, van Vuuren & Vroman, 2015), however in case of Latvia the available literature is rather limited and confined to the period before the economic crisis.

Estimates of the ethnic wage gap in case of Latvia have been obtained by Hazans (2007) who focused his analysis on the period before and after Latvia's accession to EU in 2004. He found that in 2005 Latvians earned approximately 9.6 % more than ethnic minorities and that the wage gap has somewhat declined since 2002. Interestingly that individual characteristics included in Labour Force Survey (LFS) could not explain why Latvians earn more, therefore majority of wage gap remained unexplained. By using alternative survey Hazans (2007) showed that the Latvian language skills (variable absent in LFS) play a significant role in explaining the wage gap.

Leping & Toomet (2008) analysed the ethnic wage gap in Estonia for an extensive period from the last years of the Soviet Union until the first years of the EU. The authors find that the unexplained part of ethnic wage gap worked in favour of Estonian-speaking workers and has been increasing with time.

Kahanec & Zaiceva (2008) claimed that in Latvia and Estonia ethnic minorities who are not citizens of a respective country are particularly vulnerable in the labour market. Authors, however, do not provide quantitative estimates of ethnic wage gaps for each specific country.

Authors add to the existing literature in three ways. First, we extend the research period in order to analyse how the ethnic wage gap has changed during the

economic crisis and afterwards. Secondly, we employ data not only on education level but also on education fields. Furthermore, to best of our knowledge, in case of Latvia none of the previous papers have used the quantile decomposition.

2. DATA AND METHODOLOGY

The comparison of average wages between two population groups would give the observed wage gap, however it would not provide any information on the factors that cause the difference in wage. In these circumstances, human capital theory comes handy, most particularly the Mincer-type wage equation (1):

$$\ln(Y_{gi}) = \beta_{gj}X_{gji} + u_{gji}, \quad (1)$$

where wage Y of individual i from population group g is expressed as a function of a vector (length of j) of characteristics X_{gji} and respective regression coefficient β_{gj} , u_{gji} is the error term. Characteristics included in X are factors that influence (or are associated with) wage such as education, job experience as well as sector and occupation. It is therefore visible that if one population group has on average higher values of X (assuming positive correlation between X and Y) also the average wage for that group would be higher.

Human capital theory provides a tool to analyse how much of the observed wage gap can be attributed to the differences in characteristics. Most well-known methodology was developed by Oaxaca (1973) and Blinder (1973) which shows the wage gap as a sum of explained and unexplained components (2).

$$\ln(\bar{Y}_L) - \ln(\bar{Y}_N) = \beta_{Lj}(\bar{X}_{Lj} - \bar{X}_{Nj}) + \bar{X}_{Nj}(\beta_{pj} - \beta_{Nj}), \quad (2)$$

where $\ln(\bar{Y}_L) - \ln(\bar{Y}_N)$ is the difference in average wage of, in our example, Latvians and non-Latvians. The first term of the right-hand side of (2) reflects the part of the wage gap attributable to the differences in characteristics $\beta_{Lj}(\bar{X}_{Lj} - \bar{X}_{Nj})$, i.e. the endowment effect, where \bar{X}_{Nj} & \bar{X}_{Lj} reflects means of the explanatory variables for both ethnicities and β_{Lj} are the respective wage equation coefficients for Latvians. The second term $\bar{X}_{Nj}(\beta_{pj} - \beta_{Nj})$ is the unexplained part.

In subsequent decades the theory brought about by Oaxaca and Blinder has been refined and multiple extensions have been proposed. One of the most widely accepted decomposition methods is Oaxaca-Ransom model (3).

$$\ln(\bar{Y}_L) - \ln(\bar{Y}_N) = \beta_{pj}(\bar{X}_{Lj} - \bar{X}_{Nj}) + \bar{X}_{Nj}(\beta_{pj} - \beta_{Nj}) + \bar{X}_{Lj}(\beta_{Lj} - \beta_{pj}), \quad (3)$$

where differences in observed characteristics are weighted by β_{pj} , the respective wage equation coefficients for the whole population (not β_{Lj} as before). Another difference from Oaxaca-Blinder approach is the unexplained component which consists of two parts: (a) discrimination against non-Latvians, $\bar{X}_{Nj}(\beta_{pj} - \beta_{Nj})$, and (b) the favouritism towards Latvians, $\bar{X}_{Lj}(\beta_{Lj} - \beta_{pj})$. Oaxaca-Blinder approach requires a rather strict assumption of non-discriminatory regression coefficients to weight the differences in characteristics. Ambiguity arises as the estimated size of explained and unexplained parts changes if Latvian or non-Latvian set of

coefficients is used for weighting. Oaxaca-Ransom model avoids this assumption by using coefficients of the whole population for weighting. To avoid ambiguity, we focus solely on Oaxaca-ransom model.

Furthermore, we also employ quantile decompositions of the ethnic wage gap to see whether the ethnic wage gap and its compositions differ for high and low wage earners (4). We follow the methodology proposed by Chernozhukov, Fernández-Val & Melly (2009) and Melly (2005) and decompose the wage gap as follows:

$$\begin{aligned} \hat{q}(\widehat{\beta}_L, X_L) - \hat{q}(\widehat{\beta}_N, X_N) &= [\hat{q}(\widehat{\beta}_L, X_L) - \hat{q}(\widehat{\beta}_{mLrN}, X_L)] + \\ &+ [\hat{q}(\widehat{\beta}_{mLrN}, X_L) - \hat{q}(\widehat{\beta}_N, X_L)] + [\hat{q}(\widehat{\beta}_N, X_L) - \hat{q}(\widehat{\beta}_N, X_N)], \end{aligned} \quad (4)$$

where the first part on the right-hand side of (4) is the difference in residuals, the second part is the difference in median coefficients and the third part is the endowment effect. $\hat{q}(\widehat{\beta}_{mLrN}, X_L)$ represents the wage distribution that would have prevailed if Latvians and non-Latvians had the same wage equation coefficients, but the residuals were those of the non-Latvian distribution. Term $\hat{q}(\widehat{\beta}_N, X_L)$ is the counterfactual wage distribution for Latvians if they had the same wage equation as non-Latvians. Quantile decomposition is useful to understand how the wage gap varies amongst employees at different wage levels.

We employed anonymised micro data from Labour Force Survey for Latvia (LFS; obtained from the CSB) to measure the ethnic wage gap and identify whether differences in characteristics can explain it. LFS is a large household survey that mainly focuses on economic activity of working-age population, but also includes information on person's characteristics such as education level, field of education, job tenure etc.

We narrowed the sample to the working-age population (18–64) and limited it to employees only as there is no information on the income of self-employed and company owners. When the observations with missing information were excluded the resulting sample consisted of approximately 10 000 observations per year. Our choice of the research period (2007 to 2015) allows us to measure how ethnic wage gap has changed during the period of economic crisis and afterwards.

We used the log of net monthly wage as a dependent variable (according to special agreement with CSB wages were given as precise number not intervals) limiting the sample to the full-time employees. To avoid possible heteroskedasticity, we used robust standard errors.

We used the following education variables as wage determinants: highest education level obtained, field of education, job experience (whether person is in formal studies or in on-job training) as explanatory variables to see if differences in endowments can explain ethnic wage gap. The data set included 18 ISCED levels in 2015 & 2014 (and 13 levels in earlier years) starting from no school attendance at all to doctoral degree. We distinguished three education levels: basic (ISCED 0–2), secondary (ISCED 3–4) and higher (ISCED 5–6) education*.

* ISCED – The International Standard Classification of Education.

The job experience variable was not directly observed in our database. It was calculated using individuals' age and years of schooling (data on years that the individual spent in schooling is not directly observable therefore it was calculated from the highest level of education obtained). As shown in previous studies the results of wage equation for Latvia are robust to difference specifications of experience (Vilerts, Krasnopjorovs, & Brēķis, 2015). To account for possible non-linear effects, we included a squared term of job experience. Furthermore, we included the job tenure variable to take into account that the experience in current job may be more important than that acquired at other jobs. Evidence exists that newly hired employees are often underpaid (Fadejeva & Krasnopjorovs, 2015), therefore we included a dummy variable – whether a person has changed employer during the last year.

In addition, our wage equation employs sector (NACE classification) and occupational groups (ISCO 2-digit classification), gender, citizenship, region (NUTS-3 breakdown), company size as well as dummy variables if a person works in a public sector and if a person has a supervisory role[†].

When decomposition models contain categorical variables the choice of the omitted group alters the interpretation of the results (see Fortin, Lemieux & Firpo, 2011 for detailed explanation). We solved this by transforming the coefficients of binary variables to reflect the deviations of grand mean, which in turn allowed us to include all binary variables in the wage equation (see Jann, 2008 for more details). Empirical estimation was carried out with Stata 13 software. As a particular weight was assigned to each observation, “pweight” function was used for each regression.

3. MAIN FINDINGS

Ethnic wage gap has been statistically significant in all years from 2007 to 2015. From 2007 to 2009 Latvians received on average 9 % higher wage than non-Latvians. The difference rose to approximately 15 % in 2010 and then dropped back to 10 % in subsequent years. Decomposition results show that differences in endowments explain around two thirds of the observed ethnic wage gap. Therefore, the unexplained part of the wage gap was rather small, however statistically significant in every year. The only exception was 2007 when the endowment effect accounted for 85 % of the observed wage gap rendering the unexplained part insignificant (Fig. 1), (Table A1).

[†] NACE – (Nomenclature of Economic Activities) is the European statistical classification of economic activities;

ISCO – The International Standard Classification of Occupations;

NUTS – Nomenclature of Units for Territorial Statistics.

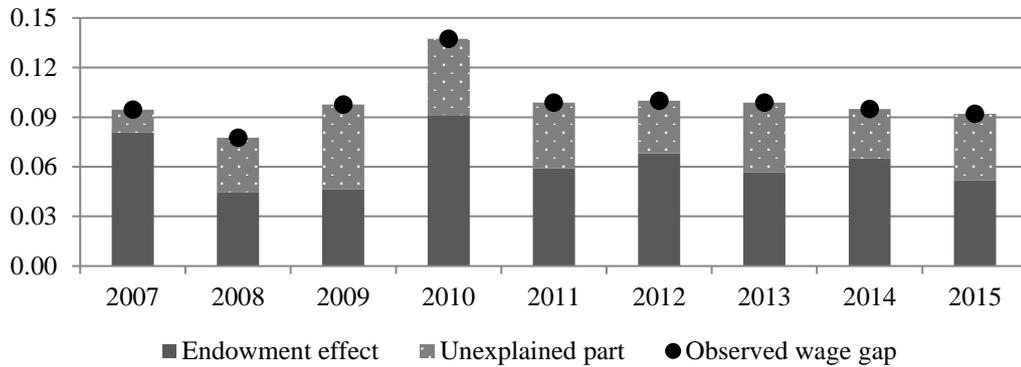


Fig. 1. Decomposition of the ethnic wage gap (log points; 2007–2015).

*Difference in % can be calculated as $\exp(\text{difference in log points}) - 1$

Source: authors' calculations using LFS micro data

These results imply that if non-Latvian employees shared the same characteristics as Latvian employees, the wage gap on average would be only 4 %. As LFS does not include a variable that directly measures the Latvian language skills, the unexplained part of the wage gap could reflect the wage premium associated with difference of native and other level of Latvian language skills (as we included Latvian citizenship as dummy in wage equation, “other” being higher than minimum level necessary to obtain Latvian citizenship). This is in line with Hazans (2007) and DAIF (2006) who found that when Latvian language skills are taken into account that the explained part of the ethnic wage gap increases significantly.

Breakdown of the endowment effect reveals that differences in the observed characteristics exhibit partially offsetting effects (Fig. 2).

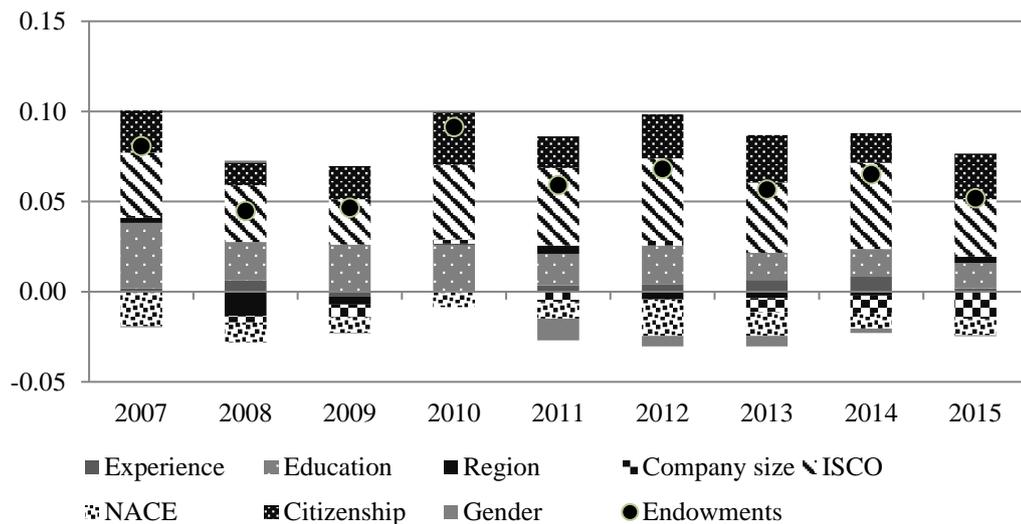


Fig. 2. Breakdown of the endowment effect (ethnic wage gap; log-points; 2007–2015).

*Difference in % can be calculated as $\exp(\text{difference in log points}) - 1$

Source: authors' calculations using LFS micro data

Education characteristics as well as segregation in better paying occupational groups are the main factors in favour of Latvians while segregation in better paying sectors is the main factor in favour of non-Latvians. Citizenship is another factor that worked in favour of Latvians as vast majority of non-citizens are non-Latvians. In order to obtain Latvian citizenship, knowledge of Latvian language is required; therefore, the citizenship variable might be capturing the effect caused by differences in Latvian language skills (between poor/no skills and the level required to obtain citizenship). Latvians are more likely than non-Latvians to work in small companies where wages tend to be lower than average. This plays a significant, but small role in favour of non-Latvians. There is clear evidence on ethnic segregation by regions; however, the aggregate impact is not large and in some years insignificant. On one hand larger share of Latvians working in Pierīga (above average wages) and smaller share in Latgale (lowest wages) contributed in explaining the ethnic wage gap. On the other hand, nearly half of the non-Latvians (as opposed to less than 30 % of Latvians) worked in Riga (highest average wage). Besides, there is also much higher share of Latvians working in Vidzeme and Kurzeme (below average wage).

Ethnic wage gap may be partly explained with low wages in occupational groups that have relatively high non-Latvian employment for example in elementary occupations; as plant and machine operators and assemblers; as well as in food processing, wood working, garment and other craft and related trades (see Table 1).

Table 1. Occupations and Sectors which Significantly Contributed to Ethnic Wage Gap in 2015

| | Above average wage | Below average wage |
|----------------------|--|--|
| Latvian* | <i>Managers, senior officials and legislators; Teaching professionals; Business and administration professionals; Information and communications technology (ICT); Legal, social and cultural professionals.</i> | Skilled agricultural, forestry and fishery workers; Education. |
| non-Latvian** | Transportation and storage. | <i>Food processing, wood working, garment and other craft and related trades workers; Plant and machine operators, and assemblers; Elementary occupations.</i> |

Italic: segregation explains part of the observed ethnic wage gap. Regular: opposite effect.

*The share of Latvians employed in particular occupation (sector) out of all employed Latvians is larger than share of non-Latvians employed in particular occupation (sector) out of all employed Non-Latvians. **The opposite.

Source: authors' calculations using LFS micro data

Significant effect also came from relatively high wages in Latvian dominant occupational groups like managers, senior officials and legislators; teaching professionals; information and communications technology (ICT) professionals. Before 2014 large share of non-Latvians employed in metal, machinery and related trades occupational groups (below average wages) also contributed in explaining the ethnic wage gap. However, in 2014, effect became insignificant which may reflect problems in the biggest metal producer in Latvia “Liepājas Metalurgs”. The only occupational group that exhibited an offsetting effect is skilled agricultural, fishery, and forestry workers (relatively high Latvian employment and below average wages).

Overall these results provide a valuable insight for further investigation. As pointed out by Fortin, Lemieux & Firpo (2011), when differences in occupational affiliation account for a large share of the wage gap, research on how different population groups (in this case Latvians and non-Latvians) choose their occupations may partially reveal the underlying causes of wage differentials. For example, DAIF (2006) argues that segregation by occupational groups may be caused by different language skills as non-Latvians are more likely to be employed in occupational groups that do not require good knowledge of Latvian language.

Segregation by sector worked in favour of non-Latvians as relatively high share of non-Latvians were employed in transportation and storage sector (above average wages) and high share of Latvians were employed in the sector with below average wages – education.

The attainment of higher education for Latvians has been slightly higher throughout the period of analysis. Furthermore, Latvians tend to be more involved in formal training and are more likely to have obtained their education more recently than non-Latvians. Moreover, segregation by education fields is slightly in favour of Latvians. Latvians benefited from choosing to study in the fields of education with relatively high returns, for example law (above average wages). The offsetting effect came from high share of Latvians that chose to study agricultural sciences (below average wages) as well as relatively higher share of non-Latvians studying engineering (above average wages).

The results of quantile regressions imply that the observed wage gap was increasing with wage (see 2015 as an example in Fig. 3) in all years from 2007 to 2015 with the only exception being 2008.

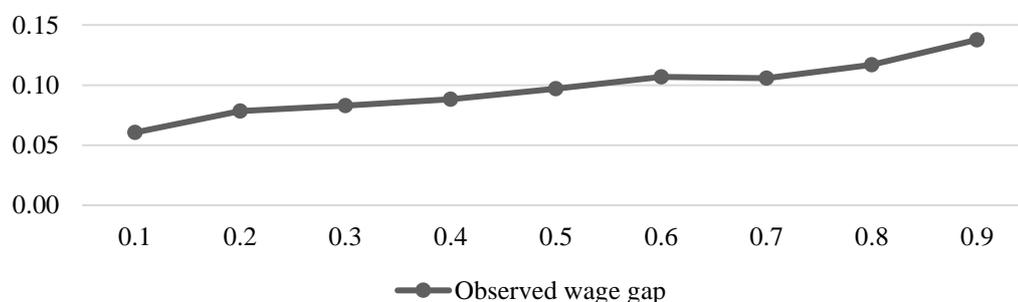


Fig. 3. Decomposition of the ethnic wage gap by deciles (log-points; 2015).

*Difference in % can be calculated as $\exp(\text{difference in log points}) - 1$

Source: authors' calculations using LFS micro data

For example, in 2015 the average wage in the 9th decile of Latvians was approximately 15 % higher than the average wage of non-Latvians. However, the difference in the 1st decile was only 6 %.

The relatively low ethnic wage gap in the lowest deciles indicates that there is little room of variation for particularly low wages. It can be caused by relatively large share of minimum wage earners. The observed wage gap seems to be increasing with wage, showing signs of possible glass ceiling effect (differences in access to jobs with the highest wages). However, this statement lacks statistical confirmation as the difference between wage gaps in the 5th and 9th deciles is not statistically significant in any year.

CONCLUSION

We use anonymized LFS micro data to measure the ethnic wage gap in Latvia during 2007–2015 and to identify the factors behind it. We found that notable ethnic wage gap still exists in Latvia with ethnic minorities earning 10 % less than Latvians in 2015.

Oaxaca-Ransom decomposition reveals that approximately two thirds of the ethnic wage gap are explained by differences in characteristics with the most important effects in favour of Latvians caused by segregation in better paying occupational groups (such as legislators and senior professionals; in turn, non-Latvian employment is relatively high in low wage elementary occupations, as plant and machine operators and assemblers, as well as in food processing, wood working, garment and other craft and related trades); presence of Latvian citizenship (which can proxy state language proficiency), and better education (higher education levels and more favourable segregation by education fields). This was partly offset by segregation by sectors, which is favourable for non-Latvians (with employment of non-Latvians being high in high-paid transport, and employment of Latvians being relatively high in low-paid education).

Overall we find strong evidence that in Latvia ethnic wage gap is mainly caused by differences in endowments while the unexplained part is rather small.

Even though large part of the unexplained ethnic wage gap probably relates to the differences in unobserved variables, such as motivation or state language proficiency, we cannot rule out that some part of it is caused by discrimination. Caution however must be taken because of significant presence of segregation by sectors, occupations and education fields. Additional research on how different population groups choose their desired level and field of education as well as career paths should be performed as segregation may reflect both discrimination (restricted access) or simply a choice made by an individual. Importance of citizenship variable as well as small, however significant, unexplained wage gap points to the importance of state language proficiency, therefore from policy perspective, strategies focusing on increasing Latvian language skills among non-Latvians could reduce both conditional and unconditional wage gaps.

Quantile regressions show that the observed ethnic wage gap is statistically significant in all deciles of wage distribution and the wage gaps seem to be

increasing with wage. That may be taken as an evidence of possible glass ceiling effect, however it is not statistically significant.

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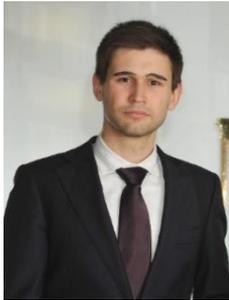
APPENDIX

Table A1. Decomposition of the Ethnic Wage Gap (log points; 2007–2015)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Observed wage gap | 0.095 *** | 0.078 *** | 0.098 *** | 0.137 *** | 0.099 *** | 0.010 *** | 0.099 *** | 0.095 *** | 0.092 *** |
| Endowment effect | 0.081 *** | 0.045 *** | 0.047 *** | 0.091 *** | 0.059 *** | 0.068 *** | 0.057 *** | 0.065 *** | 0.052 *** |
| Unexplained part | 0.014 | 0.033 *** | 0.051 *** | 0.046 *** | 0.040 *** | 0.032 *** | 0.042 *** | 0.030 *** | 0.040 *** |

Notes: *** marks the significance level of 99 %

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